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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,694	03/19/2004	Henley Quadling	12075/37	9151
757	7590	02/09/2006	EXAMINER	
BRINKS HOFER GILSON & LIONE			STOCK JR, GORDON J	
P.O. BOX 10395			ART UNIT	
CHICAGO, IL 60610			PAPER NUMBER	
			2877	

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/804,694	Applicant(s) QUADLING ET AL.	
	Examiner Gordon J. Stock	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/22/05;6/24/04;3/19/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20040624;20050222</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on June 24, 2004 and February 22, 2005 are being considered by the examiner.

Drawings and Specification

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 1500 of Fig. 15. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to because: in Fig. 11 '1100' should read -1148 and '1120' should read -1180-; Fig. 2 has two '104' designations; in Fig. 10 '1000-1006' should read -1048 and 1050-1055-. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the

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appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: '123' of Figs. 2, 3, and 9. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The specification is objected to for the following: on page 19 line 2 of paragraph 0071 '147' should read -1470-. Correction is required.

Claim Objections

6. **Claim 10** is objected to for “the known pattern” lacks antecedent basis. Correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1-3, 7, 9, 11, 13 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by **Wenz (US 5,440,393 A)—cited by applicant.**

As for **claims 1-3, 7, 9, 11, 13, and 14**, Wenz in a dental imager discloses the following: a light source having collimating optics, means for generating a collimated laser beam of light (column 3, lines 40-55; column 9, lines 45-60); a scanner optically coupled to the light source and configured to scan the collimated beam along at least two axes, scanner means (column 9, lines 20-30); an optics relay coupled to the scanner and configured to relay the scanned, collimated beam towards a remote object to be imaged; thereby, having beam relaying means (Fig. 1: 94, 90, 18, 20); an image optics system having an optical axis configured to detect a reflection of the scanned beam from the object at an angle with respect to the optics relay and to generate data representative of a surface of the object based on the reflected beam; thereby, having image capturing means (Fig. 1: 104, 108); a processor coupled to the scanner and the image optics system configured to generate a three-dimensional image of the object based on the data; thereby, having processing means (column 8, lines 40-45); the light source is a laser LED

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(column 8, line 10); the scanner comprises a plurality of mirrors (column 8, lines 25-30); where the scanner comprises a single mirror configured to scan the light along at least two axes (column 8, lines 25-30); where the scanner further comprises a programmable position controller configured to control the scan of the collimated beam (column 4, lines 45-55); where the laser light source comprises a coherence light source, the reflected light from the object being compared with light from the low coherence source reflected from a known variable path length, an interferometric system (column 8, lines 20-30); whereby, the scanning means scans the beam across the object in a selected pattern via beam relaying means (column 11, lines 35-67).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 4-6, 10, 12, 15, 17-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wenz (US 5,440,393 A)-cited by applicant** in view of **Ernst (US 6,402,707 B1)-cited by applicant**.

As for **claims 4-6, 10, 12, 15**, Wenz discloses everything as above (see **claims 1, 3, and 13**). In addition, he discloses an image sensor and an imaging lens system (Fig. 1: 108, 104, 92, 18, 20); the object is an in vivo dental item (Figure 7); wherein, triangulation is used with strip like patterns (column 6, lines 30-36). He is silent concerning a plurality of parallel curves as the pattern. However, Ernst in a dental imager teaches using curvilinear coordinates with a variety

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of patterns (column 12, lines 30-45; column 16, lines 20-45). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a plurality of curves as a pattern in order to form a three-dimensional image via a curvilinear coordinate system. Wenz does not explicitly state merging images but horizontal and vertical images are recorded (column 9, lines 20-30). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to merge the horizontal and vertical images in order to compose a three dimensional image of the cavity. As for voice-recognition means Wenz is silent. However, Ernst in a dental imager teaches using sound wave communication (column 16, lines 45-65). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a voice recognition means in order to have wireless communication.

As for **claims 17-20**, Wenz discloses in a dental imager the following: a light source having collimating optics, means for generating a collimated laser beam of light (column 3, lines 40-55; column 9, lines 45-60); a scanner optically coupled to the light source and configured to scan the collimated beam along at least two axes, scanner means (column 9, lines 20-30); an optics relay coupled to the scanner and configured to relay the scanned, collimated beam towards a remote object to be imaged; thereby, having beam relaying means (Fig. 1: 94, 90, 18, 20); an image optics system having an optical axis configured to detect a reflection of the scanned beam from the object at an angle with respect to the optics relay and to generate data representative of a surface of the object based on the reflected beam; thereby, having image capturing means (Fig. 1: 104, 108); a processor coupled to the scanner and the image optics system configured to generate a three-dimensional image of the object based on the data; thereby, having processing means that determine a map of the surface of the object which is a dental item in an oral cavity

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(column 8, lines 40-45; Figure 7); wherein, triangulation is used with strip like patterns (column 6, lines 30-36). He is silent concerning a plurality of parallel curves as the pattern. However, Ernst in a dental imager teaches using curvilinear coordinates with a variety of patterns (column 12, lines 30-45; column 16, lines 20-45). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a plurality of curves as a pattern in order to form a three-dimensional image via a curvilinear coordinate system. Wenz does not explicitly state merging images but horizontal and vertical images are recorded; thereby, having two positions with two strip like patterns in a horizontal and vertical direction which is similar to rastering (column 9, lines 20-30; column 11, lines 40-65). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to merge the horizontal and vertical images in order to compose a three dimensional image of the cavity.

11. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Wenz (US 5,440,393 A)**-cited by applicant.

As for **claim 8**, Wenz discloses everything as above (see **claim 1**) and discloses a plurality of movable mirrors (column 8, lines 25-30). He is silent concerning a rotatable mirror and a spinning polygon mirror. However, it is well-known that galvano-mirrors are used in scanning in a linear fashion and spinning polygon mirrors are known for imaging reflected light onto detectors in scanning mechanisms. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a rotatable mirror and spinning polygon mirror in order to scan a tooth along an axis and to image the reflected light from the tooth onto the imaging detector.

12. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Wenz (US**

5,440,393 A)—cited by applicant in view of Ernst (US 6,402,707 B1)—**cited by applicant** and further in view of Wu et al. (US 5,338,198 A)—**cited by applicant**.

As for **claim 16**, Wenz in view of Ernst disclose everything as above (see **claim 15**). They are silent concerning a optical relay rod lens. However, Wu in a dental modeling simulator teaches the use of a rod lens to image teeth (column 3, lines 35-45). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have an optical relay rod lens in order to image teeth in an oral cavity.

Conclusion

Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice. Applicant must seasonably challenge well known statements and statements based on personal knowledge when they are made by the Board of Patent Appeals and Interferences. In re Selmi, 156 F.2d 96, 70 USPQ 197 (CCPA 1946); In re Fischer, 125 F.2d 725, 52 USPQ 473 (CCPA 1942). See also In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well known statement is taken to be admitted prior art. In re Chevenard, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well-known statement in the **next reply** after the Office action in which the well known statement was made.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

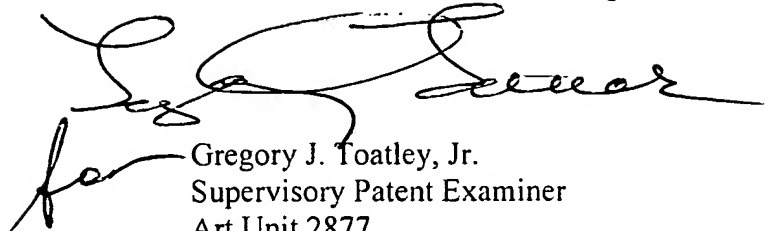
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February 3, 2006


Gregory J. Toatley, Jr.
Supervisory Patent Examiner
Art Unit 2877

**LAYLA G. LAUCHMAN
PRIMARY EXAMINER**